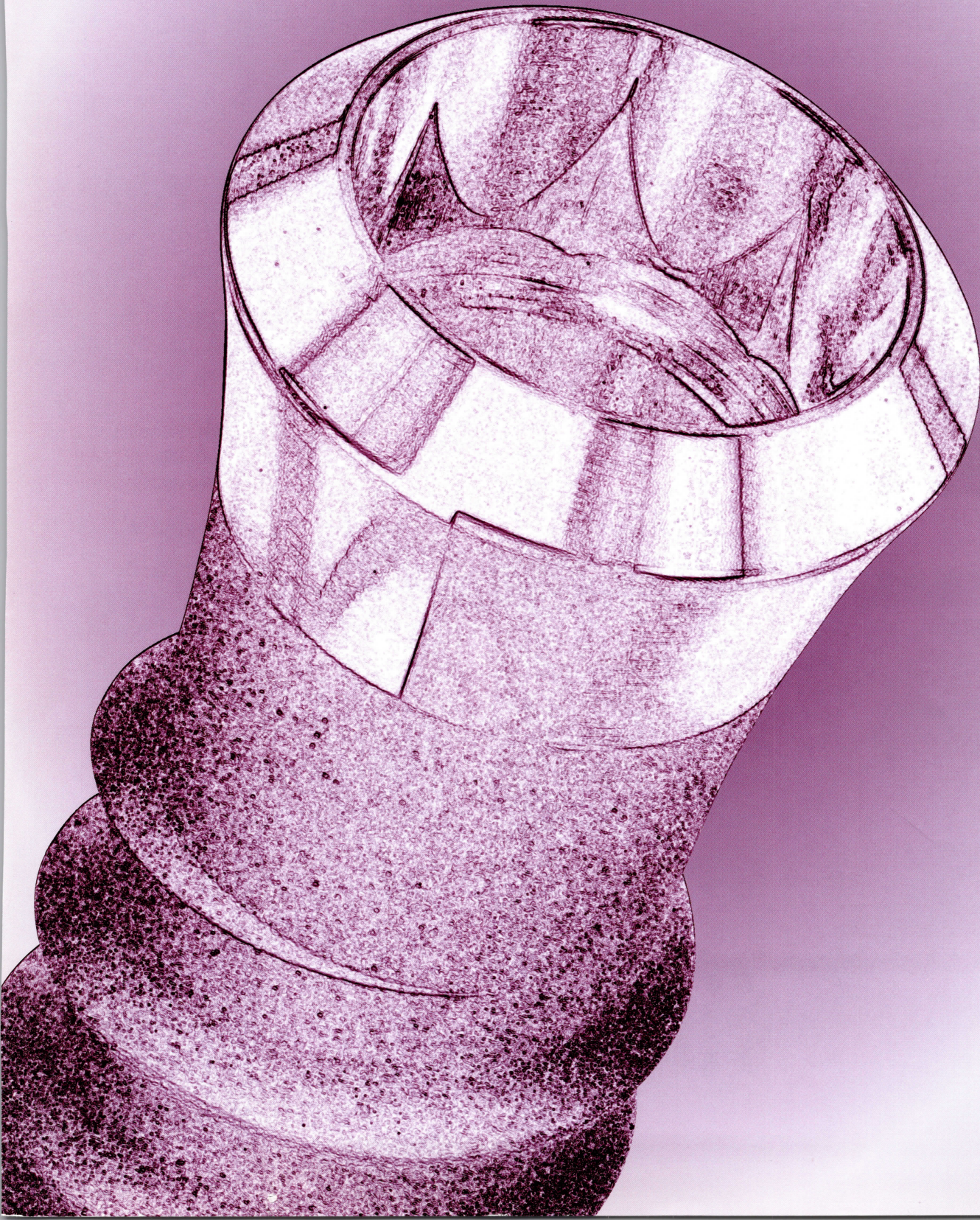


Implant Realities

Achieving success in implant dentistry

Vol. I • issue 3 • 2003



Orthodontics:

The Next Implant Revolution

- Frank Celenza, DDS

The impact of implant dentistry on the dental profession has been both profound and positive. Surgeons and restorative dentists view cases quite differently than 10 or 15 years ago. Implants are now considered realistic and advantageous alternatives in the treatment of the vast majority of partially or fully edentulous patients. This paradigm shift manifests itself in all phases of therapy, from treatment planning to execution to final result to long term maintenance care. However, while progressive surgeons and restorative dentists have seamlessly incorporated implant therapy into their every day treatment armamentarium, this is not as true of other dental specialties.

Orthodontists have not yet harnessed the power which implants offer in the treatment of a vast majority of patients. While orthodontist are aware of implants and much of their potential, complete integration of implants into the orthodontic treatment armamentarium has not yet occurred.

Orthodontists understand the added demands placed upon orthodontic therapy if implants are to be considered, such as need for appropriate root parallelism when implants are to be

placed to replace single teeth. This understanding is not commensurate with a realization of the potential advantages of implant utilization in the course of orthodontic therapy. The true impact of implants in orthodontics will be felt when implants become an integral part of orthodontic mechanics, and when their use becomes part of the orthodontic process rather than an entity which is being treatment planned for during the course of orthodontic therapy. The ultimate application of this concept is the designing of implants specifically and solely for orthodontic purposes. The ITI orthodontic implant represents such a design.

The Straumann Orthosystem Implant is elegant in its simplicity. It features an SLA surfaced endosseous implant of 4mm or 6mm in length by 3.3mm in diameter, which is ideal for mid-palatal placement. The surgical armamentarium is minimal and specific for its use. The system includes impression copings, abutments, analogs and occlusal screws, all designed specifically for orthodontic purposes. Two instruments are included for simple explantation of the implant after the completion of orthodontic loading.

Implant placement is effected through a "punch and place" surgery. A small mucosal trephine is used to punch out the palatal mucosa at the placement site. No incision, flap or sutures are required. Having managed the soft tissue aspect of implantation easily, the osteotomy is prepared with one spade drilled to depth, which prepares a shoulder for seating. The implant is self-tapped through hand wrenching.

Following an 8-week period of integration, an impression is taken utilizing the snap-on coping. A laboratory analog is inserted into the impression and a model is poured. From this model, a trans-palatal arch wire is fabricated, and bonded at 10 weeks to any teeth desired for absolute anchorage, as the arch wire is also soldered to the stainless steel abutment of the implant. Implants may be utilized for the facilitation of orthodontic anchorage in two ways:

Direct Implant Anchorage

If an implant is placed in the location of a dental unit (i.e., a tooth) the implant is employed as a direct anchor. As this implant is destined for eventual restoration, its design is that of a conventional dental implant. This implant must

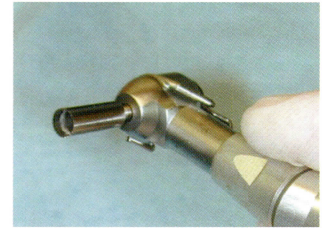


Figure 1 The mucosal trephine is used to core out the palatal mucosa at the location of the implant site.

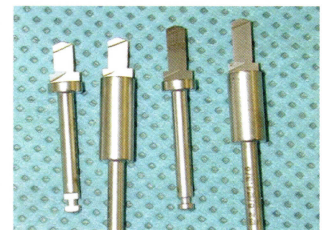


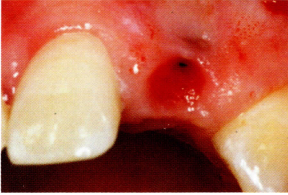
Figure 2 After using the small round bur to create an indentation at the center of the site, a spade is selected which corresponds to the implant length desired (4 or 6mm). Different length burs are available to compensate for palatal vault depth.



Figure 3 The SLA surface implant is carried to the osteotomy by hand in its holder, and is tapped in using the ratchet wrench. The implant will self-tap and bottom out against the prepared shoulder.

be integrated before being loaded. It may be included as part of the orthodontic appliance in a myriad of

Feature *Articles*



4

Variations on a Theme

*Paul A. Fugazzotto, DDS
Milton, MA*



8

Provisionalization and Cementation of a Single Implant Supported Crown: A Clinical Primer

*Gary S. Nankin, DDS
Quincy, MA*



10

Treatment Planning for Success with ITI Implants: A Case Report

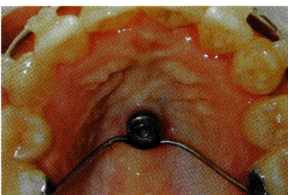
*Robert A. Levine, DDS
Philadelphia, PA*



13

Planning for Esthetics, Part 3: Immediate Placement and Immediate Esthetic Restoration of ITI Dental Implants

*Dean Morton, DDS, MS, FACP; Will Martin, DMD, MS; Jim Ruskin, DMD, MD, FACS
The University of Florida, Center for Implant Dentistry, Gainesville, FL*



16

Orthodontics: The Next Implant Revolution

*Frank Celenza, DDS
New York, NY*



Figure 10 Class III mechanics are applied to the lower arch by virtue of intermaxillary elastics bilaterally. Class I elastics are used in the upper arch.

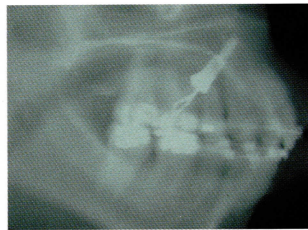


Figure 11 A Post-treatment lateral cephalogram shows bimaxillary retraction without posterior movement.



Figure 12 The patient is near completion of posterior protraction. No untoward movement of the anterior teeth is experienced.



Figure 13 A lateral cephalogram of bi-maxillary dental protrusion. A palatal implant is being utilized for bimaxillary space closure. First bicuspid are extracted from all four quadrants, and the trans palatal arch is secured to the implant and the maxillary molars.

ways. Most commonly, the direct anchor implant will receive a provisional restoration and have a conventional orthodontic bracket or attachment secured to it. This direct anchor implant is an immovable option, from which orthodontic forces may originate and be applied to effectively and predictably move natural teeth.

Indirect Implant Anchorage

Specifically designed orthodontic implants may be utilized as indirect anchors. The Straumann Ortho-system Implant is the best example of this approach available today. When employed in such a manner, the orthodontic implant is

placed in a location other than the site of a dental unit. Most commonly, these implants are placed mid palatally or in retro molar areas, and are subsequently secured to prospective anchor teeth by arches or wires. These indirectly anchored teeth then become stable and immovable and may be relied upon as effective and dramatic sources of anchorage.

Use of implants for either direct or indirect anchorage has resulted in the need for a new classification of anchor systems. Whereas orthodontists historically have classified anchors schemes as minimal, moderate or maximum, owing to the fact that teeth serving as anchors will inevitably

also move to some extent, a new classification entitled **absolute anchorage** must be included when utilizing immovable implants.

The use of an implant as an orthodontic anchor significantly alters conventional orthodontic dictums. While orthodontists must go to great lengths in manipulating their appliances when utilizing teeth as anchor units, the concern of untoward anchor movement is eliminated when implants are employed. Treatment predictability improves dramatically, and the concern of patient compliance, with regard to the use of extra oral devices or frequently changed elastics is eliminated. Treatment of the case, and hence the treatment result, are now under the sole control of the orthodontist. Appliance design may be greatly simplified, with many cases being streamlined to single arch or even sectional appliances. Wire bending and other technique sensitive and time intensive procedures are now eliminated. Most importantly, treatment plans may be changed and simplified. Many extraction cases are now treatable as non-extraction cases through the use of implants as absolute anchors. In addition, patients who would previously have been considered inappropriate candidates for orthodontic therapy may now be treated successfully. Severely mutilated dentitions which are lacking in anchorage can be treated quite effectively with implant anchorage.

Conclusion

Through the utilization of implants as orthodontic anchorage, the course of therapy is significantly contracted in many cases, and treatment outcomes are now attainable which were previously thought impossible.

The age of absolute anchorage has arrived, and patients should be treatment planned accordingly.



Figure 14 The explantation drill is used to core the implant out. It is not necessary to trephine the implant to its full depth. Guide lines on the drill are provided for depth orientation. The resulting socket heals uneventfully and without need for surgical repair.



Figure 15 After the completion of orthodontic therapy, the transpalatal bar is retrieved by debonding from the teeth and unscrewing from the abutment. The explantation guide is screwed into the implant.

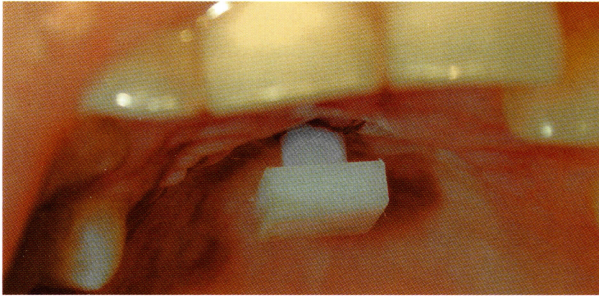


Figure 4 8 weeks post-insertion, the impression cap is snapped onto the octagonal head of the implant, and an impression is taken to register the implant and the palatal surfaces of the teeth.

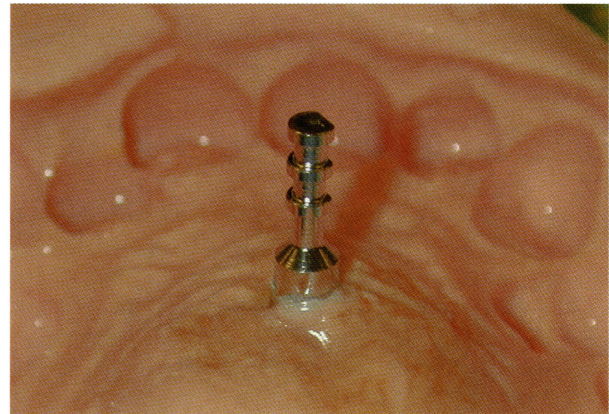


Figure 5 The laboratory analog is snapped into the impression coping, and a laboratory model is poured.

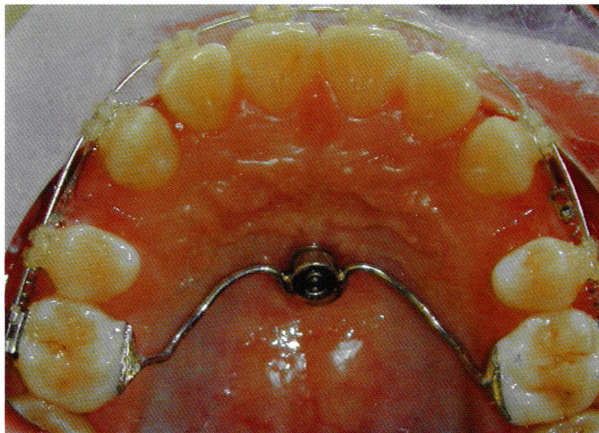


Figure 6 10 weeks post-implantation, a stainless steel transpalatal arch is soldered to the implant abutment and bonded to the palatal surfaces of the desired teeth, to provide absolute anchorage.

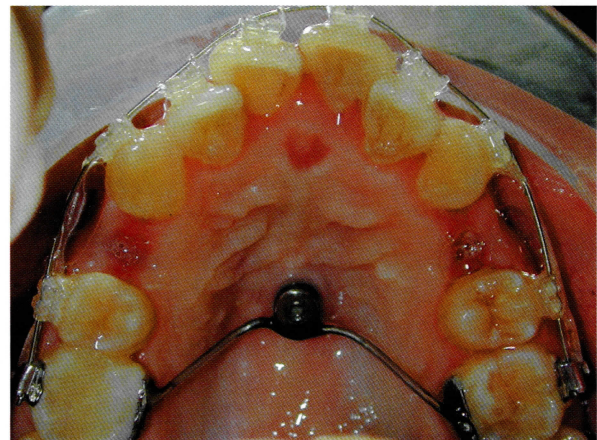


Figure 7 An example of a setup for anterior retraction. The transpalatal arch is secured to the mid-palatal implant and bonded to the palatal surfaces of first molars. First bicuspsids are extracted and full retraction is activated.

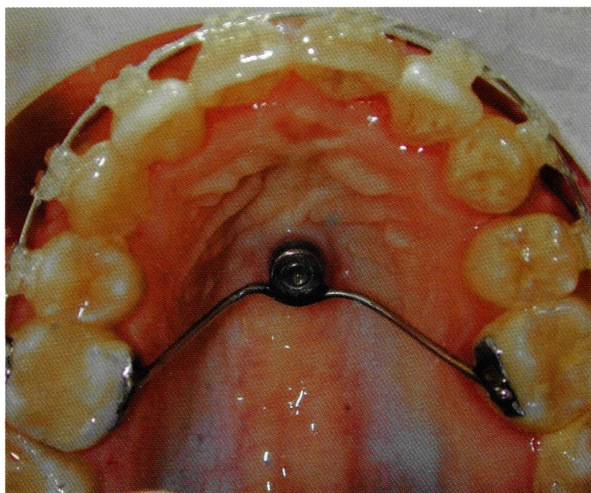


Figure 8 A view immediately post activation with extraction spaces closed by full retraction of anterior teeth and no loss of posterior anchorage.

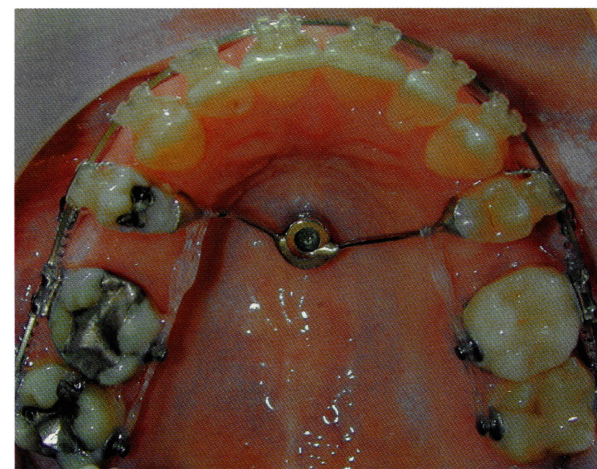


Figure 9 An example of posterior protraction into the spaces of the congenitally missing second premolars. The transpalatal arch is secured to the implant and bonded to the palatal surfaces of the first bicuspsids. Elastics are wrapped around the transpalatal arch to provide traction to the palatal surfaces of the molars, in conjunction with springs on the buccal aspects, preventing unto-ward rotation.